

WINTER RESTING SITE SELECTION BY ROE DEER AT HUZHONG, DAXINGANLING MOUNTAINS NORTHEASTERN CHINA

大兴安岭呼中林区狍冬季卧息生境的选择

吉林林业动物 关

关键词 孢子, 卧息点选择, 大兴安岭

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The winter resting site selection of Roe deer (*Capreolus capreolus*) was studied from October 20 to December 20, 1991, at Dongfanghong Forestry Farm, Huzhong, Daxinganling Mountains.

1 Study methods

In the study area we set 4 about 3500 m long transect lines with a 1000 m interval. On the transect lines we set 38 sample plots (10 m diameter circle and about 78.5 m²) with a 333 m interval. 58 sample plots around the new resting sites of the Roe deer we found were set up at the covering area of the transect lines. Thirteen indices were measured (Table 1 and 2) in each of the sample plots. Among the indices a tree was defined as that which height was taller than 3 m; a shrub was between 0.5–3 m; a dominant tree was defined as that which number exceeded 70%. A dominant shrub was defined as that which canopy coverage exceeded 70%. Canopy coverage was divided into 5 classes, i.e., (1) 0–5%; (2) 6%–25%; (3) 26%–50%; (4) 51%–75% and (5) 76%–100%. Ground vegetation was the plant whose height was lower than 0.5 m. The slope degree was measured by the line extending up and down 5 m respectively from the sample plot center.

Through calculating the mean value and frequency of the indices the difference between the random and the resting site samples, the interference of every index on the resting site selection and the relative ideal resting site of Roe deer were analysed and discussed.

2 Result and discussion

2.1 Selection on vegetation Roe deer tends to select low density (canopy coverage is 5%–25%) mixed broad-leaf shrub forest and mid-density (18 trees in a plots), dominant birch tree forest, ground vegetation with abundant lichens, mosses and grasses, but with few pine and *crystaltea ledum* as resting sites (Table 1)

The common winter foods of Roe deer are young branches of poplar, willow and birch (Ho *et al.*, 1988). There should be abundant feeding area with mixed shrubs of birch, poplar and willow and fewer pine trees. After feeding, Roe deer of ten rests just nearby the feeding site. The possible interpretation to explain Roe deer's preference for the habitat of low shrub canopy coverage and their

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Table 1 Comparison of vegetation between random sample and Roe deer bedding site

Item	Category	Random sample(n=38)			Bedding site(n=58)			t-test
		X or %	SD	$\sum X_{ij}$	X or %	SD	$\sum X_{ij}$	
Trees (DBH < 10cm)	Total No.	12.6	13.6	478	12.84	14.92	745	0.079
	Larch No.	9.4	11.98	158	6.90	11.19	400	1.030
	Birch No.	2.8	3.25	105	5.02	6.19	291	2.012*
	Percent of birch No.	26.79(31)	30.56	2269.5	62.04(48)	30.98	1822	4.839**
Trees (DBH > 10cm)	Total No.	3.05	3.09	116	4.31	3.56	250	1.766
	Larch No.	1.97	2.30	75	1.38	1.79	80	1.396
	Birch No.	1.05	2.16	40	2.90	2.80	168	3.419**
	Percent of birch No.	27.51(29)	35.36	2102.2	69.68(52)	33.92	1576.6	5.152**
Dominant tree frequency	DBH(cm)	17.04(29)	6.92	494.3	18.08(52)	5.50	940.1	0.733
	Larch	65.79			17.24			4.833**
	Birch	10.53			48.28			3.837**
	Other single species	0.00			3.45			1.157
Dominant shrub frequency	Mixed	18.42			29.31			1.205
	No tree	5.26			1.72			0.975
	Pine	31.58			5.17			3.485**
	Dahurian rhododendron	23.68			12.07			1.493
Canopy cover- age class	Other single species	13.16			17.24			0.538
	Mixed	21.05			65.52			4.265**
	No shrub	10.53			0.00			2.525*
	Tree	2.01	1.06	76.5	1.69	0.48	98	1.995
Ground vegetation species frequency	Shrub	2.36	1.26	89.5	1.53	0.59	88.75	4.292**
	Cowberry	100			80.03			2.854**
	Crystaltea ledum	71.05			12.07			5.909**
	Lichens and mosses	65.79			70.69			0.507
	Grasses	39.47			91.38			5.472**

*: Significant difference ($p < 0.05$); **: The most significant difference ($p < 0.01$). The figures in parentheses are sample numbers.

avoidance of high canopy coverage forest is that relative low density shrub seems favourable for feeding and walking, and high canopy coverage forest is shady, which is not favourable for Roe deer to obtain food and use sunny energy.

We often found abandoned half-made resting sites in abundant *Crystaltea ledum* and cowberry. That kind of habitat was difficult to walk through and to lie on. Preference for lichens, mosses and grasses are possibly related to their soft and thermal insulation.

2.2 Selection on topography and other factors Roe deer prefers to rest on gentle terrain, far from the river and the road, with little human disturbance, few logs and stumps and southfacing (96.6%), gentle ($< 10^\circ$) middle slope position (Table 2).

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In Daxinganling Mountains the distance from the water resource is not important because all of the water surfaces are frozen during winter. The animals eat snow instead of water, occasionally drink waater from glacial lakes. The road often follows the river and the most human disturbance come from the road, so the resting sites are relatively far from the river and the road.

Elevation is not the limiting factor of the resting site selection of Roe deer because relative height is only about 300 m.

Roe deer's selection of middle slope position avoids not only strong, cold winds at the top, but also shady cold at the bottom. A gentle slope is favourable for walking, feeding and resting.

The reasons that the resting sites are mainly southfacing (96.6%) are: 1) It is very cold in winter in the area, so Roe deer prefer to stay in sunny places, and 2) food is more readily available on sunny sides. Some resting sites were found at the bottom or the upper parts of slopes where Roe deer may easlily obtain solar energy and avoid cold wind.

Table 2 Comparison of topography and other Non-vegetational factors between random sample and roe deer bedding site

Item	Category	Random sample(n=38)			Bedding site(n=58)			t-test
		X or %	SD	$\sum X_{ij}$	X or %	SD	$\sum X_{ij}$	
Slepe degree	—	12.60	8.66	478	8.170	5.91	474	2.949* *
Elevation(m)	—	876.7	56.60	33315	888.36	41.48	51525	1.151
Distance from river(m)	—	453.7	287.10	17240	728.02	474.11	42225	3.169* *
Distance from road(m)	—	1097.3	664.61	41698	1416.38	605.34	82150	2.403*
No.of logs and stumps	—	1.53	2.04	58.0	0.59	1.01	34	2.965* *
Aspect frequency	South	39.47			37.93			0.152
	Southeast	10.53			41.38			3.252* *
	Northwest	7.89			1.72			1.479
	West	7.89			1.72			1.479
	Southwest	5.26			17.24			1.736
	North	13.16			0.00			2.838* *
	Northeast	10.53			0.00			2.525* *
	East	5.26			0.00			1.765
	Middle	42.11			68.97			2.610*
Stop position frequency	Top	28.95			8.62			2.614*
	Bottom	28.95			22.41			0.724

*: Significant difference ($p < 0.05$); * *: The most significant difference ($p < 0.01$).

Habitats with more logs and stumps were less frequently used. These habitats are often old forests where food resources and sunshine are less available.

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